There is a tide . . . .

THE Think Tank's recent review of energy conservation possibilities (see *Nature*, July 5) is the subject of five weekly meetings at the Royal Institution where some of the propositions and recommendations put forward in the report will be discussed and criticised. Last week's meeting dealt with the potential of tidal power—on which the report was unenthusiastic—with a quick look at wave power, regarded more favourably by the Think Tank.

The first point stressed by the speakers, Mr David Gwynn and Mr Brian Severn of Engineering and Power Development Consultants—a member of the Balfour Beattie Group—was that tidal power does work and that there is experience available in facing and overcoming the technical problems which arise.

Nobody claims that tidal power is the answer to Britain's energy problem. A scheme in the Severn Estuary, for instance, could provide a maximum of 4.5 GW and would save about 5 million tonnes coal equivalent each year in fossil fuels. But it is an inexhaustible resource and, even on the limited scale that would be possible in Britain, could produce a useful minor diversification of the energy base as part of an integrated power generating system.

The disadvantages of tidal power when viewed simply as an isolated source of electric power generation are to some extent mitigated when it is considered as part of a total energy system. The snags are, of course, that power generation is irregular. In any period of 25 hours there will be four periods of slack water when power cannot be generated and the range of tides also varies considerably.

The possible role of tidal power in providing a source of heat for district heating would be one way of overcoming the disadvantages of irregular power generation. Mr Gwynn and Mr Severn also see a role for tidal power in smaller local projects (not necessarily in Britain) in integrated schemes for estuary basins involving water storage, and in recreation (yachting, for example) with a small tidal power station serving some local use such as pumping water for irrigation.

One of the assumptions in the Think Tank report was that water storage and power generation in the same estuary would be incompatible. This was challenged by Mr Gwynn who pointed out that limited freshwater storage in 'bunded' reservoirs would not interfere with tidal movement. Larger schemes for barrages across the mouth of the estuaries for water storage are now to some extent out of favour.

Compared with tidal power, the practical capabilities of wave power are as yet untried. And there are still many unsolved problems such as storing the power generated and transmitting it to the shore, quite apart from the possible technical difficulties in manufacturing the massive steel structures which are needed for the most promising scheme involving wave power.

But in the long term wave power could theoretically provide an inexhaustible source of almost all Britain's energy requirements, and is the one new 'unconventional' source of power singled out by the energy conservation report as worthy of serious investment and consideration.

Some wider implications of the use of wave power were touched on by the meeting chairman, Professor John Page of the University of Sheffield. What effects, he wondered, would the presence of strings of these massive structures out in the Atlantic have on overall wave movement and what could be the consequences to coastal ecology and fisheries? Also, in the present confusion and uncertainty over the rights of nation states over the oceans, would there also be objections on legal grounds? □

correspondence

Bacterial engineering

SIR,—The anxiety expressed by various scientists on the hazards of partially hybridising certain types of micro-organisms has already led to considerable public disagreement. It is clear that some responsible and established workers consider it unwise to take humanity with them on any tour into the unknown, while others consider it impractical to curtail the spread of organisms by any method proof against technical errors, psychoses, and even earthquakes. This will remain true whatever is stated by any of the many committees which are likely to advise each advanced nation.

I wish to advance a simple positive proposal which cannot fail to increase the safety of any bacterial incorporation studies, and which would itself provide interesting examples of extreme adaptation which might have applications to other fields, such as waste disposal.

Contracts should be offered for the development of an organism, with suitable qualities for work on partial hybridity, which would not grow within a *p*H range of 6–8, would need an oxygen partial pressure of at least threefold the normal, and which was dependent on at least two unusual synthetic substrates. These should be very simple safeguards against any single mutation allowing reproduction in any natural host.

Once such an organism was established, it should only be necessary to provide substantial subsidies to firms undertaking to provide the necessary culture media—and such media could hardly be misappropriated—to provide an economic and technical climate within which temptations to continue to work on the worst possible organism—a commensal of the human gut—would be seen as both unnecessary and irresponsible.

Since even bacteria take time, and moratoria cannot be expected to contain curiosity for long unless alternative outlets are provided, and seen to be imminent, the matter would seem urgent, and probably too urgent for the attention of the present public funding organisations. Even if no immediate funds are available from such sources informed discussion might influence some companies which supply media and equipment for tissue culture to initiate work in the hope of reaping the large commercial rewards such developments could yield.

J. H. EDWARDS
Queen Elizabeth Medical Centre, Birmingham, UK

Why then publish?

SIR,—Recently I was a co-author on a paper in *Biochim. biophys. Acta.* Of the 140 reprint requests addressed to me no less than 70.5% were addressed to an unknown Dr B. R. Carter. I hope this frequent oversight is not a reflection on the powers of observation of the modern scientist. Perhaps this is one way of discouraging people from publishing too many papers: deny them the right of recognition.

Yours faithfully,

B. R. CATER
Sheffield, UK